

**REMARKS****Claim Status**

Claims 10-12 and 15-19 are pending after entry of this paper. Claims 10, 12, 15, 16, 18, and 19 have been rejected. Claims 11 and 17 have been withdrawn. Applicants reserve the right to pursue a withdrawn claim in a divisional or continuing application.

Reconsideration and withdrawal of the pending rejections in view of the below remarks are respectfully requested.

**Response to Rejections under 35 U.S.C. §102**

Claims 10, 12, 15, 16, 18 and 19 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,896,918 to Yokomizo (“Yokomizo”). Applicants respectfully disagree with Examiner’s reasoning as prescribed on pages 3-5 of the Office Action and the arrived conclusion that the claimed method of using a  $\beta$ -1,4-mannobiose-containing composition to inhibit the colonization of *Salmonella* in livestock and poultry is anticipated by a method for preparing a mannose-containing composition and using such compositions to inhibit *Salmonella* described in Yokomizo.

The Examiner asserts that “Yokomizo teaches methods of using a mannobiose containing composition comprising blending the composition with a feed and feeding the feed to livestock or poultry to inhibit Salmonella.” (Office Action; p. 3). The Examiner points to the abstract, Col 3, Ins. 45-48 and ln. 53 and Col 4, Table 1.”

Applicants reviewed the noted passages of the Yokomizo patent and respectfully note that these passages even in light of the whole disclosure of Yokomizo only describe mannose and are completely silent about the  $\beta$ -1,4-mannobiose. In other words, those skilled in

the art would see two substantially different methods of inhibiting *Salmonella*, one relying on a monosaccharide, *i.e.*, a mannose of Yokomizo, and the other relying on a disaccharide, *i.e.*,  $\beta$ -1,4-mannobiose of the present invention. There is no teaching in Yokomizo or the art at the time of filing to indicate to those of skill in the art that, in fact, the  $\beta$ -1,4-mannobiose is capable of inhibiting *Salmonella*, since Yokomizo only describes the increase in production of mannose (for example see Tables 1 & 2 of Yokomizo) and relies on mannose to inhibit *Salmonella* (see cited Col. 3, Ins. 45-48 of Yokomizo; “When using thus obtained mannose as a feedstuff additive for preventing Samonella [sic] infection”). In addition, applicants respectfully direct the Examiner’s attention to Example 5, which compares the amount of *Salmonella* in the animal subjects after being provided with the compositions described in Example 2 (a composition with a high content of  $\beta$ -1,4-mannobiose of the present invention) and a Comparative Example 1 (a composition with a high content of mannose, similar to Yokomizo). The data indicates that both preparations showed fewer number of bacteria than control (additive-free) over the whole period of testing, *i.e.*, both preparations were effective in reducing *Salmonella*. (Table 3 and FIG.1). However, as shown in Example 5, the instant preparation with high  $\beta$ -1,4-mannobiose content (*i.e.*, at least 3%) has shown even fewer number of bacteria than the one obtained in the Comparative Example 1. Thus, applicants respectfully assert that the use of compositions with at least 3%  $\beta$ -1,4-mannobiose content to reduce *Salmonella* cannot be deduced from the teaching of Yokomizo. In other words, those skilled in the art would not be expressly or inherently apprised of the instant invention based on the disclosure of Yokomizo, since Yokomizo relies on mannose to inhibit *Salmonella* and is silent about the use of  $\beta$ -1,4-mannobiose as shown in Example 5.

Furthermore, the Examiner argues that “Yokomizo specifically teaches that palm kernel meal is enzymatically degraded to generate oligosaccharide and thus, this obtained

product is used for the purpose of improving the animal feed and is effective for inhibiting/eliminating *Salmonella* from livestock.” (Office Action; p. 4). The Examiner points to Col 2 ln. 20-50 of Yokomizo for support. The Examiner further argues that “[t]he reaction system of a mannan degrading enzyme and a mannan-containing natural material, such as palm kernel meal, to generate a manno oligosaccharide such as  $\beta$ -1, 4-mannobiose-containing composition, and then blending with a feed is anticipated by the teachings of the reference.” Id.

Applicants respectfully assert that the cited-above passages of Yokomizo merely states that “palm kernel meal is enzymatically degraded to generate oligosaccharide and thus obtained product is used for the purpose of improving the taste of feedstuff,” or “palm kernel meal-derived mannose is expected to have an effect to eliminate *Samonella* [sic],” (Col. 2 lns. 30-36; emphasis added). Yokomizo, however, does not teach nor imply that  $\beta$ -1, 4-mannobiose of the present invention has an effect to eliminate *Salmonella*. In fact, based on the reading of this passage, those skilled in the art would be expressly taught that “mannose is expected to have an effect to eliminate *Samonella* [sic].” Therefore, in light of the fact that Yokomizo expressly teaches the use of mannose to inhibit/eliminate *Salmonella* in poultry, the mere fact that the Yokomizo’s composition might have a very small amount of  $\beta$ -1, 4-mannobiose as a side product does not provide those of skill in the art with the necessary knowledge to imply that the  $\beta$ -1, 4-mannobiose at concentrations above 3% would inhibit *Salmonella*. In fact, it would require a substantial amount of undue experimentation to determine such effect.

Finally, the Examiner argues that “[t]he amount of mannose produced is temperature and reaction time dependent and the claims are not so limited to temperature condition, reaction time and so on.” (Office Action; p. 4).

While applicants acknowledge that the independent claims 10 and 16 of the present invention do not describe enzyme types, reaction temperature, reaction time, etc. in the method of producing  $\beta$ -1, 4-mannobiose-containing composition, applicants respectfully assert that this is not dispositive. The present invention specifies that “the amount of  $\beta$ -1, 4-mannobiose is at least 3% by weight of the dry matter portion of the  $\beta$ -1,4-mannobiose-containing composition” as an essential element of the claims. Applicants respectfully assert that this essential element should not be ignored. To specify that “the amount of  $\beta$ -1, 4-mannobiose is at least 3% by weight of the dry matter portion of the  $\beta$ -1,4-mannobiose-containing composition” is very important to characterize the method of preparing  $\beta$ -1,4-mannobiose instead of describing enzyme types, reaction temperature, reaction time, etc. One skilled in the art would recognize that an extremely small amount of  $\beta$ -1, 4-mannobiose may be present in the enzymatic decomposition product of Palm Kernel Meal disclosed in Yokomizo, just like small amounts of many other compounds such as arabinose, galactose, glucose, xylose, fructose, etc (see Table 2 of Yokomizo). However, one skilled in the art would not have considered that the amount of  $\beta$ -1, 4-mannobiose is at least 3% by weight of the dry matter portion of the  $\beta$ -1, 4-mannobiose-containing composition. To support this point, applicants respectfully submit the Declaration by Mr. Futoshi Yokomizo, the inventor of the instant invention and the cited reference (Yokomizo).

Hence, for at least the above-mentioned reasons, applicants assert that the express, implicit or inherent disclosure of Yokomizo does not teach the  $\beta$ -1,4-mannobiose-containing composition of the present invention where the  $\beta$ -1,4-mannobiose content is at least 3% by weight of the dry matter portion of the composition. Furthermore, Yokomizo does not describe that the blended feed comprising the mixture of the  $\beta$ -1,4-mannobiose composition is used to inhibit *Salmonella* colonization in livestock and poultry. Since “[a] claim is anticipated only if

each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference” (M.P.E.P. § 2131; emphasis added), applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 102(e) rejections to the claims in view of the above-mentioned remarks.

#### Dependent Claims

The applicant has not independently addressed all of the rejections of the dependent claims. The applicant submits that for at least similar reasons as to why independent claims 10 and 16 from which all of the dependent claims 12, 15, 18, and 19 depend are believed allowable as discussed *supra*, the dependent claims are also allowable. The applicant however, reserves the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

Thus, applicant respectfully submits that the invention as recited in the claims as presented herein is allowable over the art of record, and respectfully request that the respective rejections be withdrawn.

#### CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

Favorable action by the Examiner is earnestly solicited.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **50-4827**, Order No. 1004334.003US.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **50-4827**, Order No. 1004334.003US.

Respectfully submitted,  
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